

Advancing Open Science

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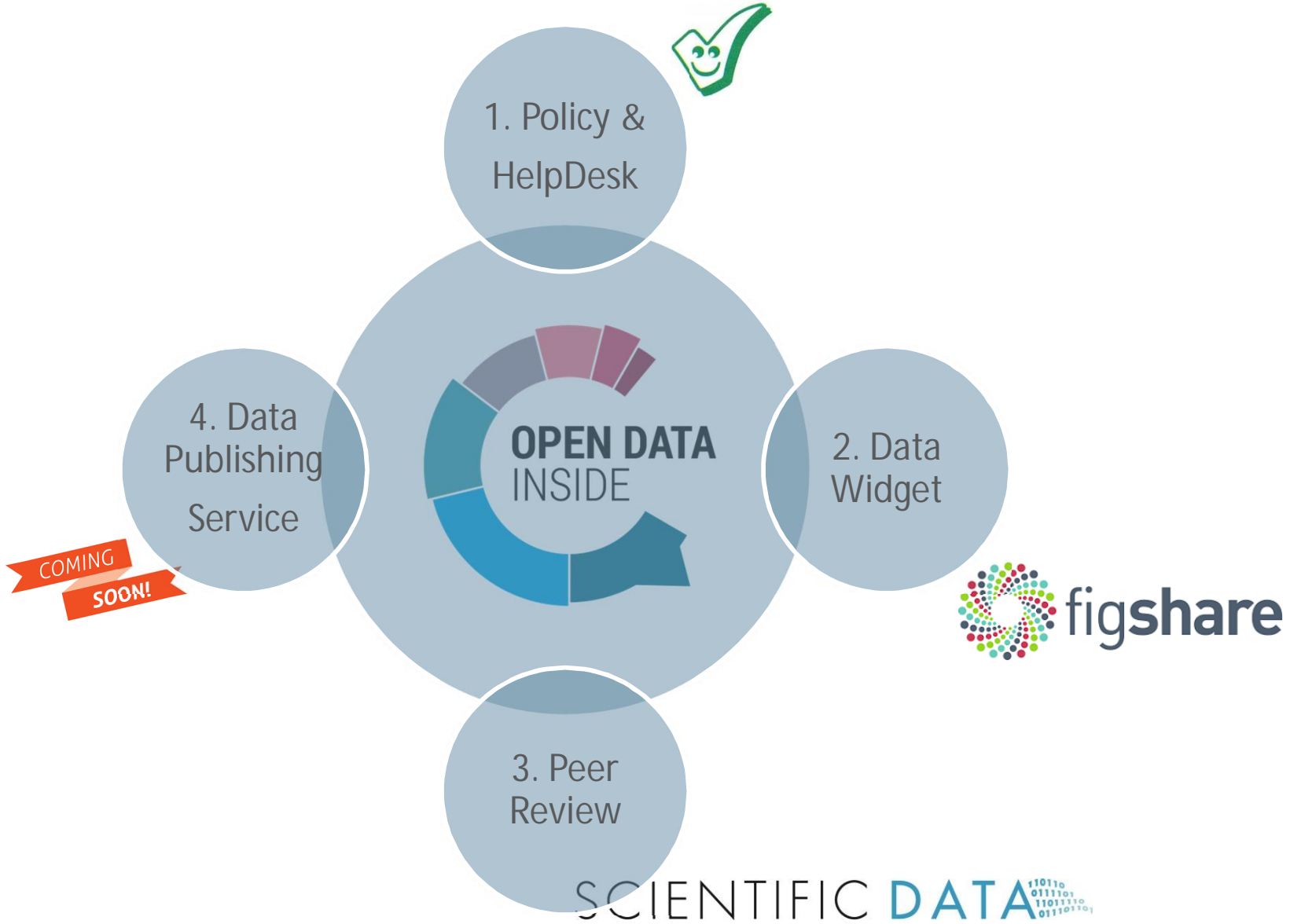
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Leading the way on open data



New open approaches - SharedIt!

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Planta
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Lanosterol synthase-like is involved with differential accumulation of steroidal glycoalkaloids in potato

Authors: Akhilesh Kumar, Edna Fogelman, Mira Weisberg, Zachariah Tanani, Richard E. Veilleux, Irit Ginzberg

Original Article
First Online: 21 August 2017

Abstract

Main conclusion
Phytosterol homeostasis may be maintained in leaves through diversion of intermediates into glycoalkaloid biosynthesis, whereas in tuber flesh, excess intermediates are catalyzed by tuber-specific *SLAS*-like, resulting in low tuber glycoalkaloids.

Lanosterol synthase (*LAS*) and cycloartenol synthase (*CAS*) are phylogenetically related enzymes. Cycloartenol is the accepted precursor leading to cholesterol and phytosterols, and in potato, to steroidal glycoalkaloid (*SGA*) biosynthesis. *LAS* was also shown to synthesize some plant sterols, albeit at trace amounts, questioning its role in sterol homeostasis. Presently, a potato *LAS*-related

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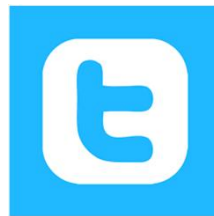
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ORIGINAL ARTICLE

Lanosterol synthase-like is involved with differential accumulation of steroidal glycoalkaloids in potato

Akhilesh Kumar¹ · Edna Fogelman¹ · Mira Weisberg¹ · Zachariah Tanani¹ · Richard E. Veilleux² · Irit Ginzberg³

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Main conclusion Phytosterol homeostasis may be maintained in leaves through diversion of intermediates into glycoalkaloid biosynthesis, whereas in tuber flesh, excess intermediates are catalyzed by tuber-specific *SLAS*-like, resulting in low tuber glycoalkaloids.

Lanosterol synthase (*LAS*) and cycloartenol synthase (*CAS*) are phylogenetically related enzymes. Cycloartenol is the accepted precursor leading to cholesterol and phytosterols, and in potato, to steroidal glycoalkaloid (*SGA*) biosynthesis. *LAS* was also shown to synthesize some plant sterols, albeit at trace amounts, questioning its role in sterol homeostasis. Presently, a potato *LAS*-related gene (*SLAS*-like) was identified and its activity verified in a yeast complementation

differential accumulation of *SGAs* in commercial cultivars—low in tubers, high in leaves. In leaves, to maintain phytosterol homeostasis, an excess of intermediates may be diverted into *SGA* biosynthesis, whereas in tuber flesh these intermediates are catalyzed by tuber-specific *SLAS*-like instead, resulting in low

Keywords Chaconine · PI tuberosum

Abbreviations
CAS Cycloartenol synthase
GAME Glycoalkaloid methyltransferase
HMG 3-Hydroxy-3-methylglutaryl-CoA reductase

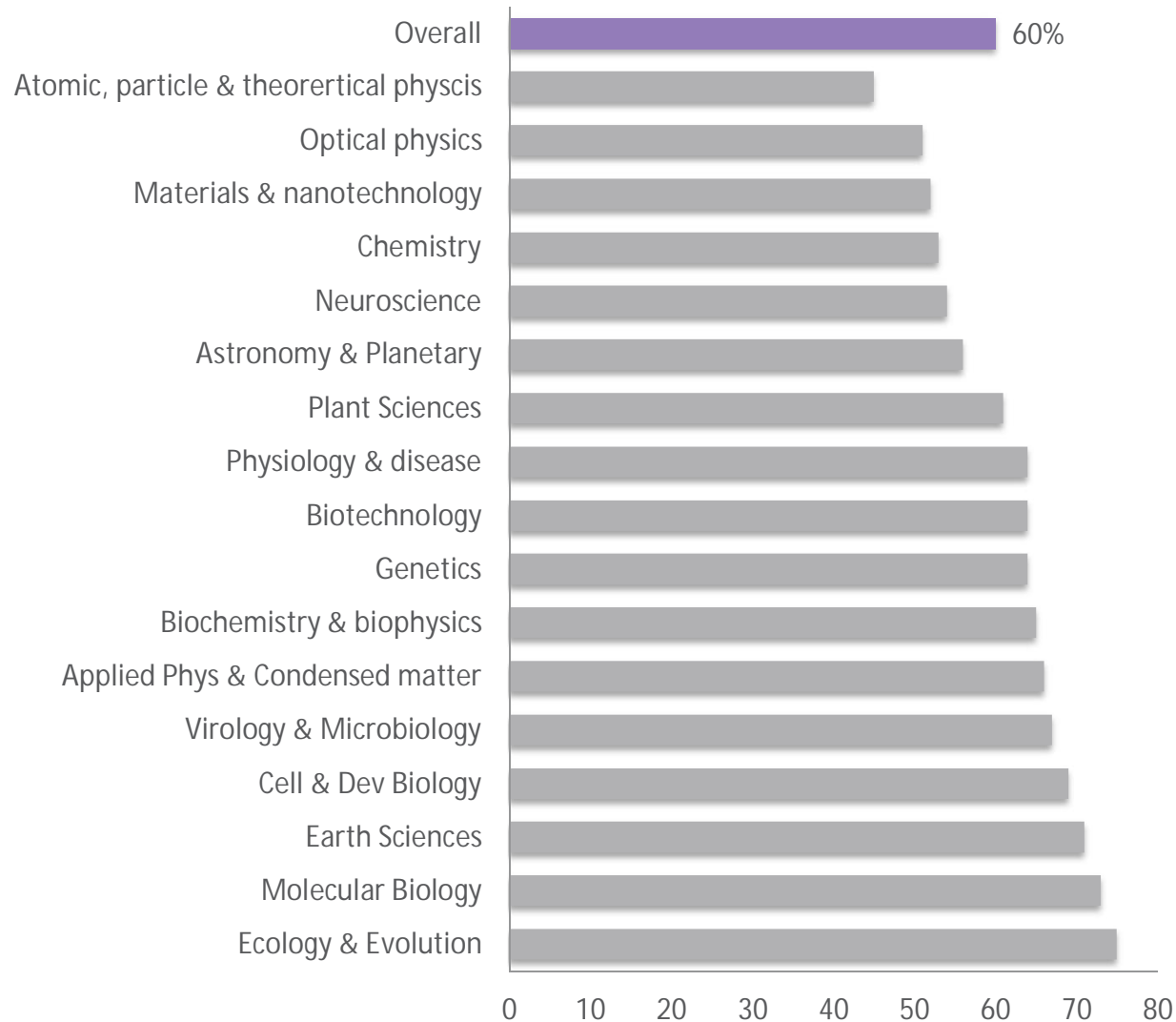
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New open approaches – open peer review

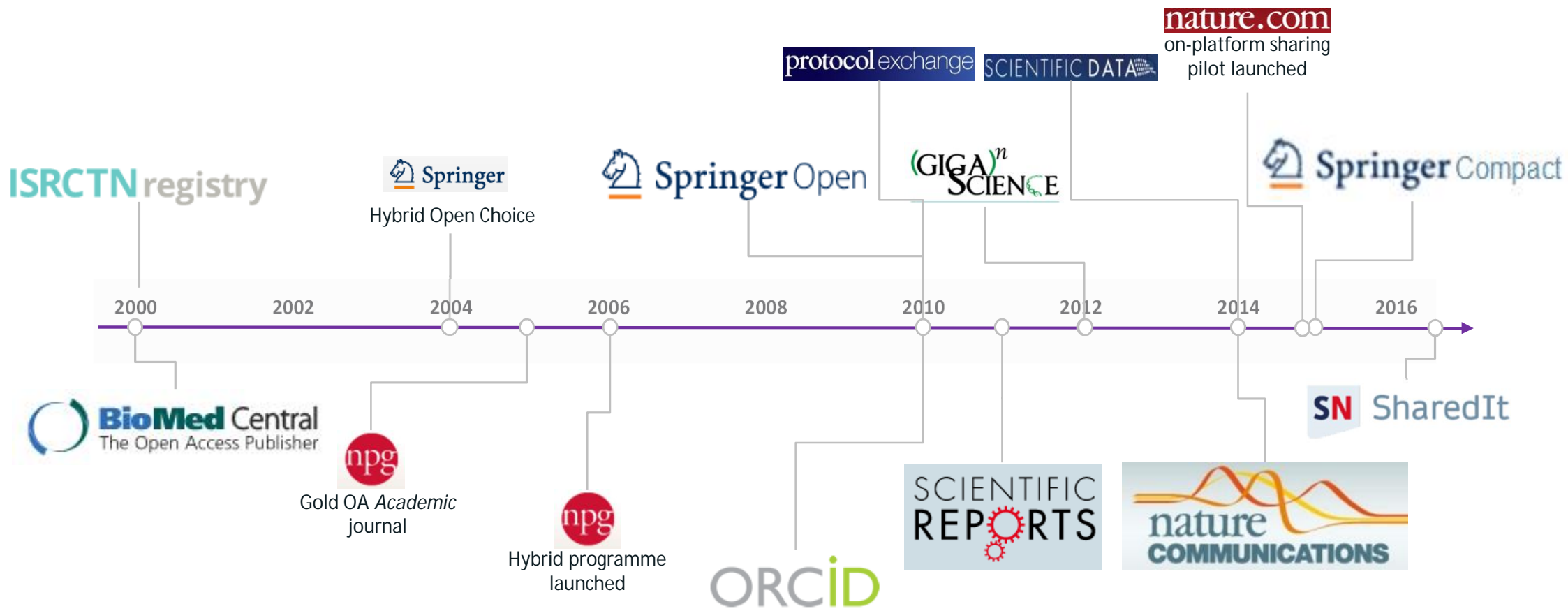


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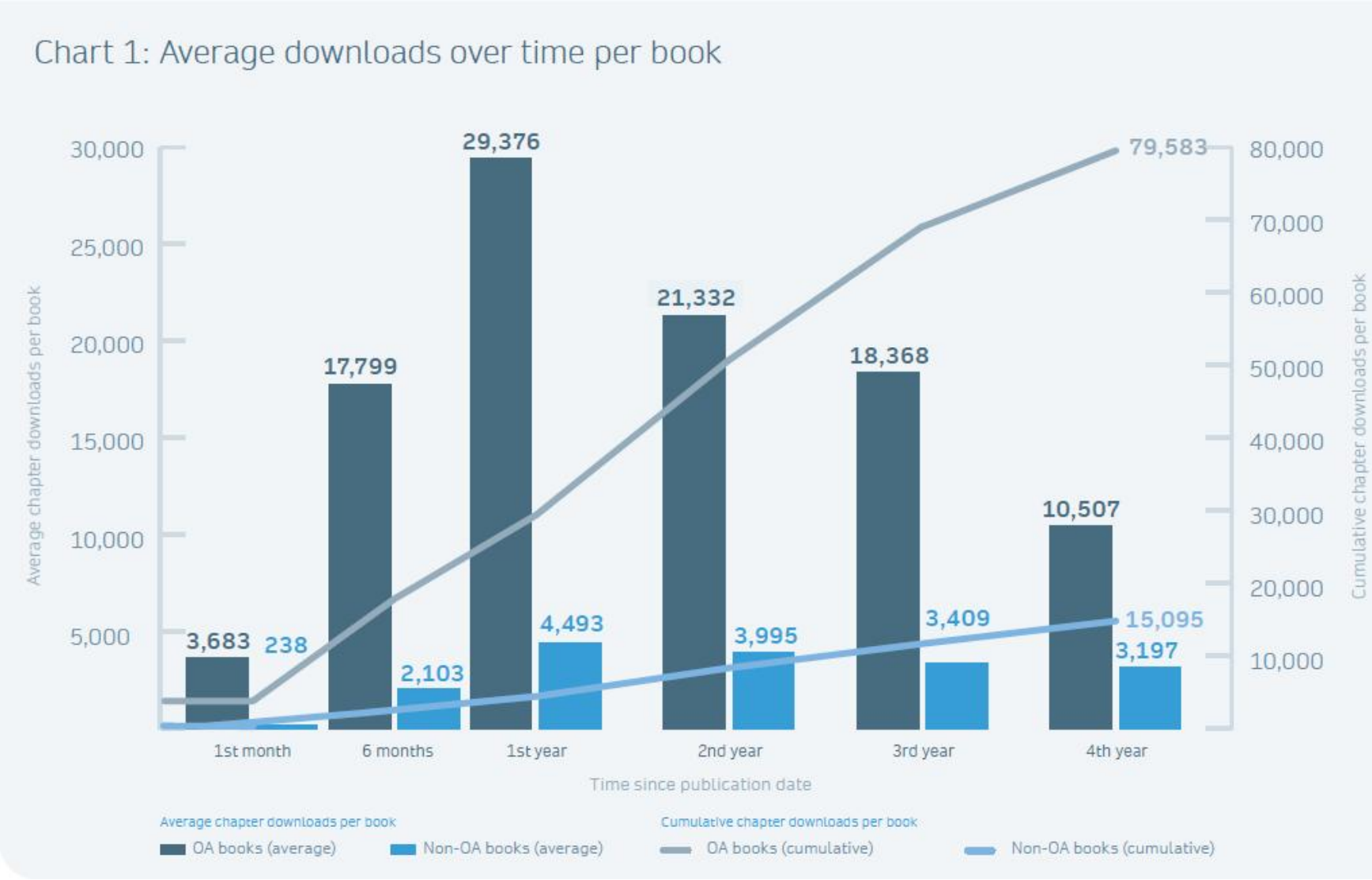
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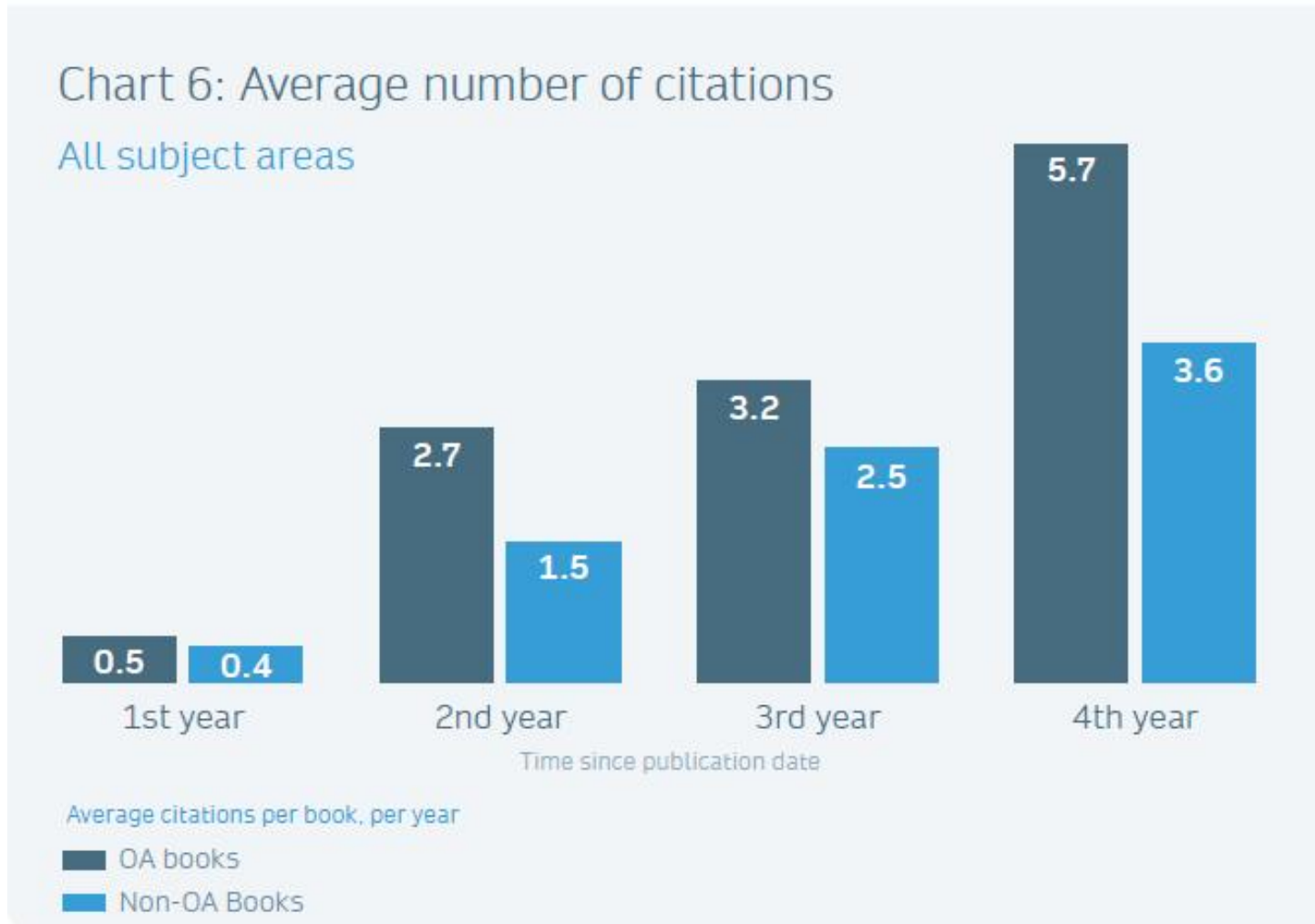
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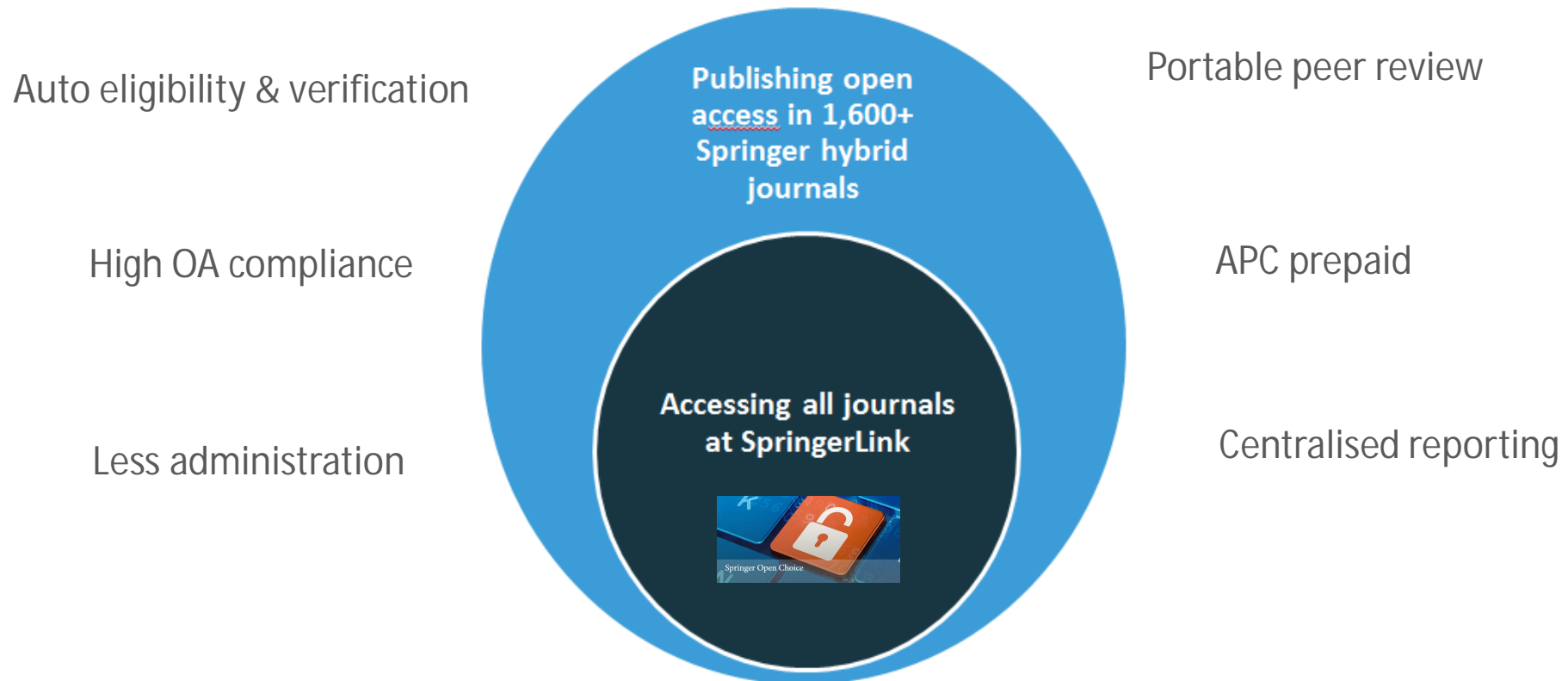
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Table 2 - Institutions opinion of the current deal

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UK business model specific replies from UK institutions						
Reduced APC administration	43.3%	30%	16.7%	3.3%	0%	3.3%
Ease of <u>workflows/process</u>	33.3%	46.7%	16.7%	0%	0%	3.3%

Thank You.

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